# Addendum to Proposal for Study Design and Manufacture of Improved Variable Anamorphic Eyepieces

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[redacted]

STAT

## 1.0 SUMMARY

In a recent proposal entitled "Proposal for Study, Design and Manufacture of Improved Variable Anamorphic Eyepieces"
STAT [redacted] described a program to improve the original version of the variable anamorphic eyepiece. This proposal was restricted to consideration of devices that could be used interchangeably with the existing eyepieces of the Zoom 70 stereoscope. Further evaluation of the problem has indicated that it may be desirable to extend this program to include possible modification of the Zoom 70 stereoscope. This addendum to that proposal describes an expanded area of study to include such possible modification.

## 2.0 TECHNICAL DISCUSSION

The existing variable anamorphic eyepiece system designed
STAT and built by [redacted] had as a design objective interchangeability with a normal eyepiece. This objective was met, but at the expense of a relatively heavy, long, and somewhat cumbersome unit. Considerable thought has been given to the problem of reducing these disadvantages. The primary problem is that to minimize aberations the anamorphic system must work in collimated light, and achievement of this collimation adds considerable length. For instance, in the existing system the actual zoom anamorphic components take up only about one-third the length of the system. There exists a real possibility of achieving this collimation, and required anamorphism, without undue extension of eyepoint if the stereoscope itself were modified. It is therefore proposed that the study portion of the above referenced proposal be expanded to include determination of an optimum modification of the Zoom 70 stereoscope for anamorphic application.

## 3.0 PROPOSED PROGRAM

It is proposed that three levels of Zoom 70 modification be considered. These are described in the following sections.

3.1 CUSTOMER MODIFICATION

The first level of modification to be considered will be simple removal of existing parts that can be done in the field by anyone familiar with the instrument who is given detailed instructions for such modification. Such modification might consist of removal of the existing eyepiece support cones, removal of the dust cover at the bottom of the eyepiece receptacle, etc.

There exists a possibility that such modification may permit use of a negative collimating lens inside the Zoom 70 so that the basic principles of the present system can be used but with a considerable reduction in eyepoint extension. This will be investigated.

3.2 FACTORY MODIFICATION

The second level of modification to be investigated will be a major modification of the optical train of the Zoom 70 without major mechanical modification. At this level of modification the instruments would have to be returned to

STAT [redacted] for modification. After modification they would no longer be useful for conventional stereoviewing applications. However, it will be an essential goal of the study to assure that the cost of such modification is at most one half the cost of the Zoom 70.

Possible modifications of this type would be replacement of the existing mirror cluster by some other mirror system, or even replacement of fixed components in the optical system itself. If advantageous and mechanically feasible optical components may be added to the system.

3.3 COMPLETE REDESIGN

The third level of modification to be considered will be complete redesign of the mechanics of the Zoom 70 system. The basic optical system will be retained since it has proven so satisfactory throughout its many years of use.

It is quite conceivable that the resulting instrument would in no way resemble the existing Zoom 70 in appearance.

Here the design objective will be to devise a unit that in comparable quantity production costs less than the present Zoom 70 with added anamorphic eyepieces.

4.0 WORK STATEMENT

This work statement is an addendum to the work statement given in the proposal referenced in section 1. All portions of the previous work statement are applicable and the following items may be considered as added on to that one.

1. Consider the possibility of achieving variable anamorphism by simple modification of the Zoom 70. Such modification will be capable of being done in the field by personnel familiar with the unit with the aid of instructions to be furnished by

STAT [redacted]

2. Study the feasibility of major modification of the existing Zoom 70. This modification would require returning the

STAT instrument to [redacted] The design goal of this modification will be to keep the cost of such modification one half or less of the current cost of a new unit.

3. Study the feasibility of complete redesign of the Zoom 70 for variable anamorphic operation. In this modification the only restriction will be to use the same basic optical system that is currently used.

4. Consideration will be restricted to those systems working only from unity upward. No consideration will be given to systems working both sides of unity such as for example .7 to 1.4.

5.0 PROGRAM SCHEDULE

It is currently anticipated that this added work will extend the previously proposed schedule for the study phase of this program by three months. Thus the new total elapsed time for the study phase of the program will be six months.